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GENERALIZED DESCRIPTION OF MAP UNITS IN BETTLES AND BEAVER QUADRANGLES, ALASKA

Map Unit (Listed by age)	Name	Description	Distribution & Thickness	Topography & Vegetation	Permafrost	Susceptibility to Frost Action	Drainage Surface	Drainage Subsurface (if thawed)	Susceptibility to Erosion	Construction Uses	Remarks
Qag	Alluvium	Silt, sand, & subangular to rounded gravel; boulders up to 6" in diameter; in some low-lying slow-flowing creeks alluvium is chiefly silt & sand.	Throughout; up to 50' thick.	Gentle to steep slopes; small spruce & shrubs south of Fort Hamlin Hills, gentle to steep slopes.	Generally absent; may be present at depth below streams that freeze to bottom during winter.	Gravel - low Silt & sand - moderate to high	Good	Good	Silt & sand - high (silt worst) Gravel - low to moderate.	Locally good for borrow material & locally good for concrete aggregate if sediments do not contain deleterious rock fragments.	Character of alluvium highly variable as to composition, grain size, & permafrost; subject to flooding; subject to maximum probable earthquake magnitude 7.5.
Qco	Colluvium	Heterogeneous mixture of silt, sand, & rock fragments; locally, contains solifluction lobes; in low-lying areas chiefly silt; on steep slopes chiefly rock fragments.	Throughout; up to 50' thick.	Gentle to steep slopes; heavy vegetation south of Fort Hamlin Hills	Generally present within 2' of surface.	Fine-grained sediments - high Coarse-grained sediments - low	"	Poor in low areas; good in coarse debris	Silt & sand - high Rock fragments - low.	Locally good for borrow material; generally, mostly fine-grained & not useful as borrow.	Highly variable in composition & ice in permafrost; locally has ice wedges as polygons; subject to maximum probable earthquake of magnitude 7.5.
Qsw	Swamp Deposits	Organic-rich silts with organic cover.	In Olsen Lakes area; depth unknown.	Poorly drained flat areas; vegetation is grass, sedges & small shrubs.	Present less than 2' below surface.	High	Poor	Poor	Low; High if water channeled through sediments.	None.	May contain ice lenses & wedges; may contain standing water; subject to maximum probable earthquake magnitude of 7.5.
Qta	Talus	Locally derived rock debris, angular to sub-angular rock fragments up to 3' across.	East side of Grayling Creek valley, northern part of Bettles quadrangle; thickness unknown.	Moderate to very steep slopes; no vegetation.	Probably absent but may exist 6' below surface.	Low	Good	Good	Low	May be source for rip-rap; however, talus generally will move if disturbed.	Slopes generally unstable; subject to maximum probable earthquake of magnitude 7.5.
Qog	Older Alluvium	Silt, sand, & subangular to rounded gravel; boulders up to 6" in diameter.	North of Prospect Creek; thickness unknown.	Gentle slopes; small trees & shrubs.	Generally within 3' to 4' of surface.	Gravel - low Silt & sand - high	Generally good	Fair to good	Silt & sand - high Gravel - low	Locally source for borrow material; locally good for concrete aggregate if sediments do not contain deleterious rock fragments.	Character of alluvium highly variable as to composition, grain-size, & permafrost conditions; subject to maximum probable earthquake of magnitude 7.5.
Qsu	Silt, Undifferentiated	Silt, sand, local swamp & gravel deposits.	Along Ray River; thickness unknown, may be as much as 25'.	Low-lying flat areas; small spruce, grasses, & sedges.	Generally within 3' of surface.	Gravel - low Silt, sand, & swamp deposits-high	Poor to fair	Poor to fair	Generally low; Locally - high.	May be good source for borrow in gravel-rich areas.	Highly variable in character & amount of permafrost; may contain ice wedges locally; subject to maximum probable earthquake of magnitude 7.5.
Qf	Windblown Silt	Generally reworked windblown silt & sand; chiefly silt.	Mantles much of area in southern part of map; thickness unknown; may be 50'	Along slopes & hilltops; heavily covered with birch, spruce, & other vegetation.	Generally within 2' of surface.	High	Good	Poor	High	None.	Ice content highly variable; locally may contain ice wedges & lenses; subject to maximum probable earthquake of magnitude 7.5.
Qlf	Lake Sediments	Silt & fine sand with organic debris.	Southern part of map area; depth unknown.	Low-lying closed depressions; grasses, sedges, & other small vegetation.	Within 2' of surface.	"	Poor	"	Low; however, if water channeled through sediments - high.	None.	"
Qgp	Terrace Sands & Gravels	Sand & clean gravel, often covered by thin (less than 2') layer of windblown silt; cobbles generally less than 6" in diameter; locally swampy.	North of Prospect Creek; thickness unknown but may be as much as 75'.	Flat to gently dipping slopes with local closed depression--contains numerous small lakes; small spruce trees.	Within 2' of surface.	Gravels - low Silt, sand, & swamp deposits-high	Generally poor	Poor to fair	Moderate on slopes; low in flat-lying areas.	Local good source of borrow material.	Character of deposits relatively variable as to grain size & amount of ice; subject to maximum probable earthquake of magnitude 7.5.
Qmp	Morainal Complex	Silt, sand, & gravel relatively clean; cobbles up to 6" in diameter.	North of Prospect Creek; thickness unknown.	Low-lying flat surface; vegetation cover of small spruce & small shrubs.	Generally within 3' of surface.	Gravel - low Silt & sand - moderate	Good	Good to fair	Low to moderate	"	Character of deposits relatively variable as to grain size & amount of ice; subject to maximum probable earthquake of magnitude 7.5.
Qhg	High-level Gravels	Clean sand & gravel; clasts chiefly subrounded to rounded; quartz rubble less than 2" in diameter.	North of Fort Hamlin Hills; thickness unknown but may be as much as 100'.	Low-lying, gentle slopes with local closed depression covered with extensive stand of birch trees.	Generally within 4' of surface; however, permafrost is generally ice-poor.	Low	"	Good	Low	Good source of borrow; good source of coarse fraction of concrete aggregate.	Although generally has low ice content, locally lenses may occur in deposit; subject to maximum probable earthquake of magnitude 7.5.
Tvs	Volcanics	Basalts & tuffs.	In Fort Hamlin Hills & near Fish Creek; thickness unknown.	Moderate slopes; covered with birch & spruce in Fort Hamlin Hills.	Depth unknown but generally within 10' of surface; ice may heal fractures & joints.	"	"	"	"	Basalt may be used as concrete aggregate; tuff, however, is deleterious as aggregate.	Subject to maximum probable earthquake of magnitude 7.5.
Ks	Conglomeratic Sandstone	Sandstone, conglomeratic sandstone, conglomerate & coal; conglomerate pebbles are quartz & metasedimentary rocks.	North part of map area near Grayling Lake; thickness unknown.	Moderate to steep slopes; scant vegetation.	"	"	"	"	"	Source of borrow; coal deleterious as concrete aggregate.	"
Kg	Granitics	Quartz monzonite, granodiorite, syenite, & monzonite.	Near Ray River, & Fish Creek, & Grayling Lake; thickness unknown.	Moderate to steep slopes covered with birch & spruce near Ray River; scant vegetation near Fish Creek.	"	"	"	"	"	Source of coarse borrow & coarse concrete aggregate if crushed.	"
M	Mafic - locally contains Schist	Gabbro, diabase, basalt with chert, & schist.	North of Fort Hamlin Hills to north boundary of map area; thickness unknown.	Moderate to steep slopes; scant vegetation.	"	"	"	"	"	Source of coarse borrow if crushed; chert deleterious as concrete aggregate.	"
UM	Ultramafic	Serpentinized periodotite & dunite.	North of Fort Hamlin Hills & near Caribou Mountain; thickness unknown.	Moderate to steep slopes; scant vegetation.	"	"	"	"	"	Source of coarse borrow if crushed.	"
Pqss	Schist, Phyllite, Greenstone; locally contains Hornfels.	Schist, phyllite, greenstone, & hornfels.	South of Prospect Creek; thickness unknown.	Moderate to steep slopes; heavy vegetation in Fort Hamlin Hills area.	"	"	"	"	"	Variable as source of borrow; schist & phyllite poor source of borrow.	"

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.